

REMARKS

This application pertains to a novel micromixer.

Claims 1-7 and 9-13 are pending, claim 8 being cancelled by this amendment. The limitations of claim 8 have been added to claim 1, thereby making claim 1 and independent form of former claim 8. Claims 13 has been withdrawn from consideration as directed to a non-elected invention, so that the claims under examination are claims 1-7 and 9-12.

Applicants respectfully request that, upon the allowance of claims drawn to elected subject matter, the non-elected claim be rejoined.

The Examiner has imposed a restriction requirement between claims 1-12, drawn to a micromixer (denoted Group I by the Examiner), and claim 13, drawn to the use of the micromixer (denoted Group II by the Examiner).

Applicants have provisionally elected Group I, with traverse.

Applicants now affirm said election, with traverse.

Reconsideration and withdrawal of the restriction requirement is respectfully requested. Any search of the micromixer itself is certain to include a search of its use,

and any search of the use of a micromixer is also certain to include a search of the micromixer as well. Accordingly, no additional burden would be placed on the Patent Office in searching both groups together. By contrast, a very great burden will be placed on Applicants if this restriction requirement is maintained. Applicants will be subjected to twice the cost and effort in prosecuting two patent applications for an invention that should have been included in one, and will also be subjected to the continuing expense of maintaining two separate patents, whereas only one should be required to cover the full invention.

In addition, an additional burden will be placed on the public, in that the full scope of Applicants' exclusive rights will not be ascertainable from a single patent, and the public will have to find and study two separate patents to ascertain the full scope of Applicants' exclusive rights.

The great additional burden that will be placed on Applicants and the public in maintaining the restriction requirement is far greater than the slight, if any, additional burden that will be placed on the Patent Office in withdrawing the Restriction Requirement.

Accordingly, the restriction requirement should be withdrawn.

Claim 5 stands rejected under 35 U.S.C. 112, second paragraph, because the Examiner views the expression "the non-return valve" as lacking antecedent basis. The Examiner has been kind enough to suggest that this issue be overcome by making

claim 5 depend from claim 2 instead of from claim 1. Applicants gratefully acknowledge the Examiner's kind suggestion. In carefully reviewing this claim, Applicants' have determined that the offending expression was introduced into this claim through error, and that actually "...the reflux barrier..." was intended, and this expression does have support in claim 1. Claim 5 has now been amended accordingly, and the rejection of claim 5 under 35 U.S.C. 112, second paragraph, should now be withdrawn.

Claim 12 stands rejected under 35 U.S.C. 112, second paragraph, because the Examiner finds the phrase "according to the invention" to be vague. The claim has now been amended to eliminate the offending phrase, and the rejection of claim 12 under 35 U.S.C. 112, second paragraph, should now be withdrawn.

Claims 1-4, 6-9 (now 6, 7 and 9) and 12 stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C.103(a) as obvious over, Schmikons et al. (US 5,372,283).

Claim 1, as now amended, requires that the entry gaps be bounded by microstructured components.

The Examiner has not pointed out any disclosure of microstructures on components 9 (the valve plunger) and/or 16 (the spacer disc). To the contrary, it appears that whenever the plunger tip 122 is discussed (e.g. col. 3 near the top or columns 5/6) the focus appears to be on it (or the flow) being "smooth".

Those skilled in the art would understand, however, that the microstructures present on Applicants' components 9 (the valve plunger) and/or 16 (the spacer disc) bounding the entry gaps according to original claim 8 result in a surprising improvement in mixing efficiency, particularly in the case that the channel leading away from the mixing zone widens, which is practically a must layout to avoid deposits. Without such microstructures the fluid layers exiting the mixing zone would widen as well, all but losing good mixing properties, as the exiting "thin" lamellae of fluid would widen as well under laminar conditions.

Examples for such embodiments are illustrated in Figures 2b and 4 with the general principle illustrated in Applicants' Figure 3 and the corresponding parts of Applicants' description.

Accordingly, Applicants' claims are neither anticipated by or obvious over Schmikons et al., and the rejection of claims 1-4, 6-9 (now 6, 7 and 9) and 12 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C.103(a) as obvious over, Schmikons et al. (US 5,372,283) should now be withdrawn.

Claim 5 stands rejected under 35 U.S.C.103(a) as obvious over, Schmikons et al. (US 5,372,283) in view of Nickelson et al. (US 4,051,769). The differences between Applicants' claims and anything that can be found in the Schmikons et al reference have been discussed above. The Examiner relies on the Nickelson et al. reference for what he sees as a membrane as an alternative to a spring based check valve. Such an alternative could not possibly overcome the differences discussed above, however, and

the rejection of claim 5 under 35 U.S.C.103(a) as obvious over, Schmikons et al. (US 5,372,283) in view of Nickelson et al. (US 4,051,769) should now be withdrawn.

Claim 5 stands rejected under 35 U.S.C.103(a) as obvious over, Schmikons et al. (US 5,372,283) in view of Stuart (US 2004/0008572). The differences between Applicants' claims and anything that can be found in the Schmikons et al reference have been discussed above. The Examiner relies on the Stuart reference for a feed for an envelope stream. No envelope stream could possibly overcome the differences discussed above, however, and the rejection of claim 5 under 35 U.S.C.103(a) as obvious over, Schmikons et al. (US 5,372,283) in view of Stuart (US 2004/0008572) should now be withdrawn.

In view of the present amendments and remarks it is believed that claims 1-7 and 9-13 are now in condition for allowance. Reconsideration of said claims by the Examiner is respectfully requested and the allowance thereof is courteously solicited.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, Applicant requests that this be considered a petition therefor. Please charge the required petition fee to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fee or credit any excess to Deposit Account

No. 14-1263.

Respectfully submitted,
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